

CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 9 (canceled).

Claim 10 (currently amended). A control method for a valve actuator, which comprises the following steps:

charging and/or discharging the actuator in accordance with a control action to move the actuator to a predetermined first open valve position specified by a first setpoint value and charging and/or discharging the actuator in accordance with the control action to move the actuator from the first open valve position to a predetermined second open valve position specified by a second setpoint value such that the actuator is not substantially completely discharged while moving from the first open valve position to the second open valve position, the first open valve position ~~and the second open valve position~~ corresponding to a ~~respective charge state, and the second open valve position~~ ~~corresponding to a further charge state;~~

during an idle time between two consecutive chargings or dischargings, determining a controlled variable reflecting the a charge state of the actuator and/or a valve position;

      acquiring an external measured variable in the form of a pressure at the valve; and

      during an idle time between two consecutive chargings or dischargings, regulating the control action in dependence on the controlled variable and, additionally, on the external measured variable.

Claim 11 (previously presented). The control method according to claim 10, wherein at least one valve position selected from the group consisting of the first open valve position and the second open valve position is a partially open valve position.

Claim 12 (previously presented). The control method according to claim 10, which comprises determining the controlled variable by measuring a voltage across the actuator and/or a charge of the actuator.

Claim 13 (currently amended). The control method according to claim 10, which comprises determining the control action for ~~charging by a specified charging characteristic, determining the control action for discharging by a specified discharging characteristic, wherein the charging characteristic and the discharging characteristic have charging and/or discharging by a~~

specified charging characteristic and/or discharging characteristic having a specified shape and steepness.

Claim 14 (previously presented). The control method according to claim 13, which comprises adjusting the steepness of the charging characteristic and/or of the discharging characteristic as part of the regulating step.

Claim 15 (previously presented). The control method according to claim 13, which comprises adjusting the shape of the charging characteristic and/or of the discharging characteristic as part of the regulating step.

Claim 16 (previously presented). The control method according to claim 10, which comprises determining the control action by the charging duration and/or the discharging duration, wherein the charging duration and/or the discharging duration are adjusted as part of the regulating step.

Claim 17 (previously presented). The control method according to claim 10, wherein the valve actuator is a piezoelectric actuator and the valve is an injection valve for an internal combustion engine.

Claim 18 (previously presented). The control method according to claim 10, wherein the regulating step is a closed-loop control step.

Claim 19 (currently amended). A control device for at least one valve actuator, the control device comprising:

    a controller configured to charge and/or discharge the actuator in accordance with a control action to move the actuator to a predetermined first open valve position specified by a first setpoint value and to charge and/or discharge the actuator in accordance with the control action to move the actuator from the first open valve position to a predetermined second open valve position specified by a second setpoint value such that the actuator is not substantially completely discharged while moving from the first open valve position to the second open valve position, the first open valve position corresponding to a charge state, and the second open valve position corresponding to a ~~respective~~ further charge state, said controller being characterized by the control action; and

    a closed-loop control regulator connected to said controller for adapting the control action of said controller;

    said regulator having an input connected to the actuator and/or to the valve in order to acquire a first controlled variable;

    the controlled variable reflecting a charge state of the actuator and/or a valve position; and

    said regulator being configured to acquire the controlled variable discontinuously during idle times in each case and adjusting the control action discontinuously in idle times in each case;

said regulator having an input connected to at least one sensor for detecting a pressure at the valve defining, wherein the pressure defines a second controlled variable.

Claim 20 (previously presented). The device according to claim 19, wherein said regulator is superimposed on said controller.

Claim 21 (previously presented). The device according to claim 19, wherein the valve actuator is a piezoelectric actuator and the valve is an injection valve of an internal combustion engine.

Claim 22 (previously presented). The device according to claim 19, wherein the actuator is exclusively charged in order to move from the first open valve position to the second open valve position.

Claim 23 (previously presented). The device according to claim 19, wherein the actuator is exclusively discharged in order to move from the first open valve position to the second open valve position.

Claim 24 (previously presented). The control method according to claim 10, wherein the actuator is exclusively charged in order to move from the first open valve position to the second open valve position.

Claim 25 (previously presented). The control method according to claim 10, wherein the actuator is exclusively discharged in order to move from the first open valve position to the second open valve position.

Claim 26 (previously presented). The control method according to claim 10, wherein the control action, which has been regulated in dependence on the controlled variable and the external measured variable, takes effect when a subsequent setpoint value is used to specify a subsequent open valve position.

Claim 27 (previously presented). The device according to claim 19, wherein the control action, which has been adapted by said regulator, takes effect when a subsequent setpoint value is used to specify a subsequent open valve position.

Claim 28 (new). The control method according to claim 10, which comprises discharging the actuator in accordance with the control action, and determining the control action for the discharging by a specified discharging characteristic, wherein the discharging characteristic has a specified shape and steepness.